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FOREST PRODUCTS LABORATORY  
LIST OF PUBLICATIONS  
ON  
STRUCTURAL SANDWICH, PLASTIC LAMINATES,  
AND WOOD-BASE COMPONENTS

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U. S. Department of Agriculture  
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In cooperation with the University of Wisconsin

LIST OF PUBLICATIONS ON STRUCTURAL SANDWICH, PLASTIC  
LAMINATES, AND WOOD-BASE COMPONENTS  
AVAILABLE FROM THE FOREST PRODUCTS LABORATORY  
MADISON, WISCONSIN 53705<sup>1</sup>

	<u>Page</u>
Solid wood. . . . .	1
Plywood and veneers . . . . .	4
Joints and fastenings . . . . .	9
Wood and plywood structural members . . . . .	10
All-wood laminates . . . . .	12
Plastic laminates . . . . .	12
Stabilized wood and wood-resin laminates . . . . .	17
Pulp, paper, and lignin laminates . . . . .	18
Adhesives and glue-joint properties . . . . .	19
Sandwich construction. . . . .	23
Pathological and Biological Features. . . . .	34
Publication lists issued by the Forest Products Laboratory . . . . .	36

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<sup>1</sup>-This list was previously issued as Forest Products Laboratory Report No. RPI-4 under the title "List of Publications on Structural Sandwich, Plastic Laminates, and Wood-Base Aircraft Components Available from the Forest Products Laboratory, Madison 5, Wis."

## MECHANICAL AND OTHER PHYSICAL PROPERTIES

Title	Author	Publication and date
<hr/>		
<u>Solid Wood</u>		
Forest Products Laboratory's toughness testing machine.		: FPL Rept. 1308. : 1941. 1961.*
Effect of ten repetitions of stress on the bending and compressive strengths of Sitka spruce and Douglas-fir.		: FPL Rept. 1320. : 1943. 1960.*
Effect of a single reversal of stress on the static and impact bending strength of Sitka spruce and Douglas-fir.	: Kommers, W. J.	: FPL Rept. 1325. : 1943. 1962.*
The fatigue behavior of wood and plywood subjected to repeated and reversed bending stresses.	: Kommers, W. J.	: FPL Rept. 1327. : 1943. 1960.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<u>Solid Wood (continued)</u>		
Supplement: The fatigue behavior of Douglas-fir and Sitka spruce subjected to reversed stresses superimposed on steady stresses.	Kommers, W. J.	FPL Rept. 1327-A. 1944. 1960.*
Stress-strain relations in wood and plywood considered as orthotropic materials.		FPL Rept. 1503. 1944. 1962.*
Effect of elliptic or circular holes on the stress distribution in plates of wood or plywood considered as orthotropic materials.		FPL Rept. 1510. 1944. 1962.*
Strength and related properties of balsa and quipo woods.	Wiepking, C. A., & Doyle, D. V.	FPL Rept. 1511. 1944. 1960.*
Distribution of strength values in wood for aircraft construction.	Drow, J. T., Clark, M. E., & Wilson, T. R. C.	FPL Rept. 1515. 1946. 1956.*
Survey of strength and related properties of yellow-poplar.	Luxford, R. F., & Wood, L. W.	FPL Rept. 1516. 1944. 1959.*
Effect of hydraulic-equipment oils on the bending and compressive strength of Sitka spruce.	Drow, J. T.	FPL Rept. 1520. 1945. 1962.*
Elastic properties of wood: The Young's moduli, moduli of rigidity, and Poisson's ratios of balsa and quipo.	Doyle, D. V., Drow, J. T., & McBurney, R. S.	FPL Rept. 1528. 1945. 1962.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr/>		
<u>Solid Wood</u> (continued)		
Supplement: Young's moduli and Poisson's ratios of Sitka spruce and their relations to moisture content.	: Drow, J. T., & : : McBurney, R. S. : : : :	: FPL Rept. 1528-A. : 1946. 1959.* : : :
Supplement: The moduli of rigidity of Sitka spruce and their relations to moisture content.	: Doyle, D. V., : : McBurney, R. S., : : & Drow, J. T. : : :	: FPL Rept. 1528-B. : 1946. 1962.* : : :
Supplement: Young's moduli, moduli of rigidity, and Poisson's ratios of mahogany and khaya.	: Doyle, D. V., & : : Drow, J. T. : : :	: FPL Rept. 1528-C. : 1946. 1962* : :
Supplement: Young's moduli and Poisson's ratios of Douglas-fir and their relations to moisture content.	: McBurney, R. S., : : & Drow, J. T. : : :	: FPL Rept. 1528-D. : 1946. 1962.* : :
Supplement: Young's moduli, Poisson's ratios, and moduli of rigidity of sweetgum at approximately 11 percent moisture content.	: McBurney, R. S., : : Doyle, D. V., & : : Drow, J. T. : : :	: FPL Rept. 1528-F. : 1946. 1962.* : : :
Supplement: Young's moduli, moduli of rigidity, and Poisson's ratios of yellow-poplar.	: Drow, J. T., & : : McBurney, R. S. : : :	: FPL Rept. 1528-G. : 1946. 1962.* : :
Supplement: Young's moduli, moduli of rigidity, and Poisson's ratios of yellow birch.	: Drow, J. T., & : : McBurney, R. S. : : :	: FPL Rept. 1528-H. : 1946. 1962.* : :

\*Information Reviewed and Reaffirmed.



## MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

	:	:
Title	:	Author : Publication and date
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### Solid Wood (continued)

Guide to determining slope of grain in lumber and veneer.	: Koehler, Arthur	: FPL Rept. 1585.
	:	: 1943. 1960.*
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Instruments for rapidly measuring slope of grain in lumber.	: Anderson, Eric A.,	: FPL Rept. 1592.
	: Koehler, Arthur,	: 1945. 1960.*
	: & Krone, Robert	:
	: H.	:
	:	:
Strength of orthotropic materials subjected to combined stresses.	: Norris, Charles B.	: FPL Rept. 1816.
	:	: 1950. 1962.*
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Strength of wood beams of rectangular cross section as affected by span-depth ratio.	: Bechtel, S. C., &	: FPL Rept. 1910.
	: Norris, Charles	: 1952. 1959.*
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### Plywood and Veneers

Manufacture and general characteristics of flat plywood.	:	: FPL Rept. 543.
	:	: Revised 1961.
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The bending strength and stiffness of plywood.	: Freas, Alan D.	: FPL Rept. 1304.
	:	: 1956. 1962.*
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Effect of 5,000 cycles of repeated bending stresses on 5-ply Sitka spruce plywood.	: Kommers, W. J.	: FPL Rept. 1305.
	:	: 1943. 1960.*
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Methods of calculating the strength and modulus of elasticity of plywood in compression.	: Liska, J. A.	: FPL Rept. 1315.
	:	: Revised 1955.
	:	: 1960.*
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\*Information Reviewed and Reaffirmed.



# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr/>		
<u>Plywood and Veneers (continued)</u>		
Buckling of flat plywood plates in compression, shear, or combined compression and shear.	March, H. W.	FPL Rept. 1316. 1942. 1962.*
Supplement: Buckling of flat isotropic plates in compression, shear, or combined compression and shear.		FPL Rept. 1316-A. 1942. 1960.*
Supplement: Buckling of plates of any symmetrical construction.		FPL Rept. 1316-B. 1942. 1962.*
Supplement: Plates having the grain of the face plies inclined to the edges.		FPL Rept. 1316-C. 1943. 1962.*
Supplement: Buckling of flat plywood plates in compression with face grain at 0° and 90° to load.	Norris, Charles, B., & Voss, A. W.	FPL Rept. 1316-D. 1943. 1962.*
Supplement: Effective width of thin plywood plates in compression with the face grain at 0° and 90° to load.	Norris, C. B., & Voss, A. W.	FPL Rept. 1316-E. 1943. 1961.*
Supplement: Buckling of long, flat plywood plates under uniform shear. Grain of face plies inclined to edges, edges clamped.	March, H. W.	FPL Rept. 1316-F. 1943. 1962.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr/>		
<u>Plywood and Veneers (continued)</u>		
Supplement: Buckling tests of flat plywood plates in compression with face grain at 15°, 30°, 45°, 60°, and 75° to load.	Norris, C. B., & Voss, A. W.	FPL Rept. 1316-G. 1943. 1960.*
Supplement: Buckling of flat plywood plates in uniform shear with face grain at angles of 0°, +45°, and 90°.	Voss, A. W., Norris, C. B., & Palma, Joseph, Jr.	FPL Rept. 1316-H. Revised 1950. 1962.*
Supplement: Effective width of thin plywood plates at maximum load in compression with the face grain at 0°, 15°, 30°, 45°, 60°, 75°, and 90° to load.	Norris, C. B., Voss, A. W., & McKinnon, P. F.	FPL Rept. 1316-I. 1945. 1962.*
Supplement: Buckling tests of flat plywood plates in compression with face grain 45° to load--Loaded edges clamped, others simply supported.		FPL Rept. 1316-J. 1949. 1962.*
Buckling of long, thin, plywood cylinders in axial compression.	March, H. W., Norris, C. B., & Kuenzi, E. W.	FPL Rept. 1322. 1943. 1962.*
Supplement: Mathematical treatment.	March, H. W.	FPL Rept. 1322-A. 1943. 1962.*
A comparison of the buckling strength of thin-walled cylindrical and barrel-shaped plywood shells.	Kuenzi, Edward W.	FPL Rept. 1323. 1943. 1962.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr/>		
<u>Plywood and Veneers</u> (continued)		
Plastic flow (creep) properties of two yellow birch plywood plates under constant shear stress.	Norris, C. B., & Kommers, W. J.	FPL Rept. 1324. 1943. 1960.*
Compression, tension and shear tests on yellow-poplar plywood panels of sizes that do not buckle with tests made at various angles to the face grain.	Norris, C. B., & McKinnon, P. F.	FPL Rept. 1328. 1946. 1962.*
Thin-walled plywood cylinders in bending.	Kuenzi, Edward W.	FPL Rept. 1502. 1944. 1962.*
Rectangular plywood plates with the grain of the face plies inclined to the edges.	March, H. W.	FPL Rept. 1507. 1944. 1962.*
Effect of length on the buckling stresses of thin-walled, plywood cylinders in axial compression.	Kuenzi, Edward W.	FPL Rept. 1514. 1944. 1959.*
Effect of moisture on the compressive, bending, and shear strengths, and on the toughness of plywood.	Drow, John T.	FPL Rept. 1519. 1945. 1957.*
Buckling of thin-walled plywood cylinders in torsion.	March, H. W., Norris, C. B., Smith, C. B., & Kuenzi, E. W.	FPL Rept. 1529. 1945. 1960.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
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<u>Plywood and Veneers (continued)</u>		
Buckling of stiffened, flat, plywood plates in compression--	Heebink, T. B., March, H. W., &	FPL Rept. 1553. 1946. 1962.*
A single stiffener perpendicular to stress.	Norris, C. B.	
Supplement: A single stiffener perpendicular to stress.	Heebink, T. B., & Norris, C. B.	FPL Rept. 1553-A. 1946. 1962.*
Face grain of plywood at 45° to its edges.		
Supplement: A single stiffener parallel to stress.	Smith, C. B., Ringelstetter, L. A., & Norris, C. B.	FPL Rept. 1553-B. 1947. 1960.*
Supplement: A single stiffener parallel to stress face grain of plywood at 45° to its edges.	Norris, C. B., & Ringelstetter, L. A.	FPL Rept. 1553-C. 1948. 1962.*
The effect of a stiffener on the maximum load of flat plywood plates in edgewise compression, with the face grain at 0° and 90° to the load. A single stiffener parallel to the direction of loading. Load edges clamped, others simply supported.	Ringelstetter, L. A., & Norris, C. B.	FPL Rept. 1553-D. 1949. 1959.*
The effective stiffness of a stiffener attached to a flat plywood plate.	Smith, C. B., Heebink, T. B., & Norris, C. B.	FPL Rept. 1557. 1946. 1962.*
Torsional buckling of longitudinally stiffened, thin-walled, plywood cylinders.	Kuenzi, Edward W., & Norris, C. B.	FPL Rept. 1563. 1948. 1962.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	:	Author	:	Publication and date
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## Plywood and Veneers (continued)

Effect of axial stiffness on the buckling properties of thin curved plywood plates in axial compression.	:	Werren, Fred, & Norris, C. B.	:	FPL Rept. 1567. 1948. 1961.*
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Critical buckling strength of stiffened flat plywood plates in compression and shear-- Closely spaced stiffeners.	:	Norris, C. B., Kommers, W. J., & McKinnon, P. F.	:	FPL Rept. 1800. 1948. 1956.*
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The effect of veneer thickness and grain direction on the shear strength of plywood.	:	Norris, C. B., Werren, Fred, & McKinnon, P. F.	:	FPL Rept. 1801. 1948. 1961.*
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Effect of circumferential stiffeners on the buckling properties of thin, curved plywood panels in axial compression.	:	Heebink, T. B., & Norris, C. B.	:	FPL Rept. 1812. 1950. 1961.*
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## Joints and Fastenings

Performance of bolted joints in Douglas-fir.	:	Doyle, Donald V., & Scholten, John A.	:	Research Paper FPL 2. 1963.
	:		:	
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Bolt-bearing strength of wood and modified wood.	:		:	
Supplement: Bearing strength of commercial cross-banded compreg under aircraft bolts.	:	Hunt, P. J., Goodell, H. R., & Phillips, R. S.	:	FPL Rept. 1523-B. 1946. 1962.*
	:		:	
Supplement: Bearing strength of commercial aircraft plywood under aircraft bolts.	:	McLeod, A. M.	:	FPL Rept. 1523-C. 1946. 1962.*
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\*Information Reviewed and Reaffirmed.



## MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

	:	:
Title	:	Author
	:	Publication and date
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### Joints and Fastenings (continued)

Supplement: Bearing strength	: Sanborn, W. A.,	: FPL Rept. 1523-D.
of wood members reinforced	: Goodell, H. R.,	: 1946. 1962.*
with plywood and cross-	: Ely, A. W., &	:
banded compreg under single	: Phillips, R. S.	:
and multiple aircraft bolts.	:	:
	:	:
Effect of thickness of plywood	: Sanborn, W.A.	: FPL Rept. 1527.
reinforcing plates on the	:	: 1945. 1962.*
behavior of solid wood air-	:	:
craft spars under changes in	:	:
moisture content.	:	:
	:	:
End joints of various types in	: Luxford, R. F., &	: FPL Rept. 1622.
Douglas-fir and white oak	: Krone, R. H.	: 1946. 1961.*
compared for strength.	:	:
	:	:
Theoretical design of a nailed	: Kuenzi, Edward	: FPL Rept. 1951.
or bolted joint under lateral	: W.	: Revised 1955.
load.	:	: 1960.*

### Wood and Plywood Structural Members

Deflection of beams with	: Newlin, J. A., &	: FPL Rept. 1309.
special reference to shear	: Trayer, G. W.	: 1941. 1956.*
deformations. The influence	:	:
of the form of a wooden beam	:	:
on its stiffness and strength--	:	:
I.	:	:
	:	:
Form factors of beams sub-	:	: FPL Rept. 1310.
jected to transverse loading	:	: 1941. 1956.*
only.	:	:

\*Information Reviewed and Reaffirmed.

MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr/>		
<u>Wood and Plywood Structural Members (continued)</u>		
Stresses in wood members sub-	: Newlin, J. A., &	: FPL Rept. 1311.
jected to combined column and	: Trayer, G. W.	: 1941. 1956.*
beam action. The influence of	:	:
the form of a wooden beam on	:	:
its stiffness and strength--III.	:	:
	:	:
Design of plywood webs in box	:	:
beams.	:	:
Supplement: Buckling in shear	: Lewis, W. C.,	: FPL Rept. 1318-B.
webs of box and I-beams and	: Heebink, T. B.,	: 1943. 1960.*
the effect upon design criteria.	: Cottingham, W.	:
	: S., & Dawley,	:
	: E. R.	:
	:	:
Supplement: Additional tests of	: Lewis, W. C.,	: FPL Rept. 1318-C.
box beams and I-beams to sub-	: Heebink, T. B.,	: 1944. 1960.*
stantiate further the design	: Cottingham, W.	:
curves for plywood webs in	: S., & Dawley,	:
box beams--tests of plywood	: E. R.	:
webs in the tension field.	:	:
	:	:
Supplement: Buckling and	: Lewis, W. C.,	: FPL Rept. 1318-D.
ultimate strengths of shear	: Heebink, T. B.,	: 1944. 1959.*
webs of box beams having	: Cottingham,	:
plywood face grain direction	: W. S.	:
parallel or perpendicular to	:	:
the axis of the beams.	:	:
	:	:
Supplement: The effect of	: Lewis, W. C.,	: FPL Rept. 1318-E.
repeated buckling on the	: Heebink, T. B.,	: 1944. 1959.*
ultimate strength of box beams	: Cottingham,	:
with shear webs in the	: W. S.	:
inelastic buckle range.	:	:

\*Information Reviewed and Reaffirmed.



## MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title

Author

Publication and date

### Wood and Plywood Structural Members (continued)

Effects of certain defects and stress-concentrating factors on the strength of tension flanges of box beams.	: Lewis, W. C., : Heebink, T. B., : & Cottingham, : W. S.	: FPL Rept. 1513. : 1944. 1959.* : :
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### All-Wood Laminates

Strength of glued laminated Sitka spruce made up of rotary-cut veneers.	: Luxford, R. F.	: FPL Rept. 1512. : 1944. 1962.* : :
Deflection characteristics of two 20-foot-diameter laminated wood rings subjected to compressive loading along diameter.	: Werren, Fred, & : Ethington, : Robert L.	: FPL Rept. 1877. : 1960. : : :
Stiffness and bending strength of beams laminated from two species of wood.	: Ethington, Robert : L.	: FPL Rept. 2156. : 1960. :

### Plastic Laminates

Directional properties of glass-fabric-base plastic laminate panels of sizes that do not buckle.	: Werren, Fred, & : Norris, C. B.	: FPL Rept. 1803. : 1949. 1956.* : : :
Supplement.	: Werren, Fred	: FPL Rept. 1803-A. : 1950. 1962.* : :
Supplement.	: Werren, Fred, & : Gish, Marvin	: FPL Rept. 1803-C. : 1957.

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr style="border-top: 1px dashed black;"/>		
<u>Plastic Laminates (continued)</u>		
Effect of span-depth ratio and thickness on the mechanical properties of a typical glass-fabric-base plastic laminate as determined by bending tests.	: Werren, Fred	: FPL Rept. 1807. : 1949. 1960.*
Effect of prestressing in tension or compression on the mechanical properties of two glass-fabric-base plastic laminates.	: Werren, Fred	: FPL Rept. 1811. : 1950. 1957.*
Effect of defects on the tensile and compressive properties of a glass-fabric-base plastic laminate.	: Werren, Fred, : & Heebink, B. G.	: FPL Rept. 1814. : 1950. 1960.*
Strength of orthotropic materials subjected to combined stresses.	: Norris, Charles : B.	: FPL Rept. 1816. : 1950. 1962.*
Strength of scarf and lap joints in glass-fabric-base plastic laminates.	: Werren, Fred, & : Freas, Alan D.	: FPL Rept. 1818. : 1950. 1961.*
Effect of moisture absorption on flexural properties of a glass-fabric-polyester laminate.	: Boller, K. H.	: FPL Rept. 1819. : 1950. 1962.*
Mechanical properties of plastic laminates.	: Werren, Fred	: FPL Rept. 1820. : 1951. 1958.*
Supplement.		: FPL Rept. 1820-A. : 1953. 1960.*

\*Information Reviewed and Reaffirmed.

MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
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<u>Plastic Laminates (continued)</u>		
Supplement.	Werren, Fred	FPL Rept. 1820-B. 1955. 1960.*
Supplement.	Youngs, Robert L.	FPL Rept. 1820-C. 1956. 1962.*
Supplement.	Stevens, Gordon H.	FPL Rept. 1820-D. 1958.
Mechanical properties of cross-laminated and composite glass-fabric-base plastic laminates.	Freas, Alan D., & Werren, Fred	FPL Rept. 1821. 1951. 1961.*
Supplement.	Freas, Alan D., & Werren, Fred	FPL Rept. 1821-A. 1953. 1959.*
Fatigue tests of glass-fabric-base laminates subjected to axial loading.	Boller, K. H.	FPL Rept. 1823. 1952. 1958.*
Supplement.	Boller, K. H.	FPL Rept. 1823-A. 1954. 1960.*
Supplement.	Werren, Fred	FPL Rept. 1823-B. 1956. 1962.*
Supplement: Effect of notches.	Kimball, Kenneth E.	FPL Rept. 1823-C. 1958.
Bolt-bearing properties of glass-fabric-base plastic laminates.	Werren, Fred	FPL Rept. 1824. 1951. 1958.*
Supplement.	Youngs, Robert L.	FPL Rept. 1824-A. 1955. 1960.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr style="border-top: 1px dashed black;"/>		
<u>Plastic Laminates (continued)</u>		
Supplement: Effect of laminate thickness.	: Youngs, Robert L.	: FPL Rept. 1824-B. 1955. 1960.*
Supplement.	:	: FPL Rept. 1824-C. 1957.
Effect of thickness on strength of glass-fabric-base plastic laminates.	: Boller, K. H.	: FPL Rept. 1831. 1954. 1959.*
Stress-rupture tests of a glass-fabric-base plastic laminate.	: Boller, K. H.	: FPL Rept. 1839. 1953. 1959.*
Mechanical properties of a laminate designed to be isotropic.	: Werren, Fred, & Norris, C. B.	: FPL Rept. 1841. 1953. 1959.*
Interlaminar shear strength of glass-fiber-reinforced plastic laminates.	: Werren, Fred, & Heebink, B. G.	: FPL Rept. 1848. 1955. 1960.*
Supplement.	: Youngs, Robert L.	: FPL Rept. 1848-A. 1956. 1962.*
Tensile properties of glass-fabric laminates with laminations oriented in any way.	: Erickson, E. C.O., & Norris, C. B.	: FPL Rept. 1853. 1955. 1960.*
Effects of tensile preloading and water immersion on flexural properties of a polyester laminate.	: Youngs, Robert L.	: FPL Rept. 1856. 1956. 1962.*
Supplement.	:	: FPL Rept. 1856-A. 1957.

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\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<u>Plastic Laminates</u> (continued)		
Dimensional stability of glass-cloth-reinforced laminates.	Heebink, Bruce G.	FPL Rept. 1858. 1956. 1962.*
Poisson's ratio for glass-fabric-base plastic laminates.	Youngs, Robert L.	FPL Rept. 1860. 1957.
Tensile stress-rupture and creep characteristics of two glass-fabric-base plastic laminates.	Boller, Kenneth H.	FPL Rept. 1863. 1957.
Effect of tensile and compressive preloading on tensile, compressive, and shear properties of a glass-fabric-base epoxy laminate.	Kimball, Kenneth E.	FPL Rept. 1870. 1959.
Effect of thickness on the mechanical properties of glass-fabric-base plastic laminates.	Youngs, Robert L.	FPL Rept. 1873. 1960.
Effect of infrared heat on 45° tensile strength of two reinforced phenolic laminates.	Boller, Kenneth H.	FPL Rept. 1879. 1961.
Predicting the strength of reinforced plastic laminates with temperature gradients.	Boller, Kenneth H.	FPL Rept. 1881. 1961.
Effects of aging on the compressive properties of glass-fabric-base polyester laminates.	Kimball, Kenneth E.	FPL Rept. 1882. 1961.
Fatigue test of phenolic laminate at high stress levels and elevated temperatures.	Stevens, G. H.	FPL Rept. 1884. 1961.

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	:	Author	:	Publication and date
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## Plastic Laminates (continued)

Relationship between thickness and mechanical properties of several glass-fabric-base plastic laminates.	:	Kimball, Kenneth E.	:	FPL Rept. 1885. 1962.
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Interlaminar properties of five plastic laminates.	:	Kimball, Kenneth E.	:	FPL Rept. 1890. 1962.
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Effect of long-term loading on glass-reinforced plastic laminates.	:	Boller, K. H.	:	FPL Rept. 2039. 1955. Revised 1958.
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Application of Prot test method to stress-rupture curves of glass-reinforced plastic laminates.	:	Boller, K. H.	:	FPL Rept. 2118. 1958.
	:		:	

## Stabilized Wood and Wood-Resin Laminates

Forest Products Laboratory resin-treated wood (impreg).	:	Stamm, Alfred J., & Seborg, R. M.	:	FPL Rept. 1380. 1942. Revised 1962.
	:		:	
Forest Products Laboratory resin-treated, laminated, compressed wood (compreg).	:	Stamm, A. J., & Seborg, R. M.	:	FPL Rept. 1381. 1942. 1960.*
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Effect of resin treatment and compression upon the properties of wood.	:	Seborg, R. M., & Stamm, Alfred J.	:	FPL Rept. 1383. 1942. 1956.*
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Comparison of commercial water-soluble phenol-formaldehyde resinoids for wood impregnation	:	Burr, Horace K., & Stamm, Alfred J.	:	FPL Rept. 1384. 1945. 1956.
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\*Information Reviewed and Reaffirmed.



## MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

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Title	:	Author : Publication and date
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### Stabilized Wood and Wood-Resin Laminates (continued)

The electrical resistivity of resin-treated wood (impreg and compreg), hydrolyzed-wood sheet (hydroxylin), and laminated resin-treated paper (papreg).	: Weatherwax, Richard C., & Stamm, Alfred J.:	: FPL Rept. 1385. 1943. 1963.*
Influence of manufacturing variables on the impact resistance of resin-treated wood.	: Millett, M. A., Seborg, R. M., & Stamm, A. J.:	: FPL Rept. 1386. 1943. 1962.*
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Acetylated wood.	: Tarkow, Harold, Stamm, Alfred J., & Erickson, E. C. O.:	: FPL Rept. 1593. 1955. 1960.*
Mechanical properties of laminated modified wood.	: Erickson, E. C. O.:	: FPL Rept. 1639. 1947. Revised 1952. 1959.*

### Pulp, Paper, and Lignin Laminates

Strength and related properties of Forest Products Laboratory laminated paper plastic (papreg) at normal temperature.	: Erickson, E. C. O., & Boller, K. H.:	: FPL Rept. 1319. 1943. 1959.*
The gluing of laminated paper plastic (papreg).	: Eickner, Herbert W.:	: FPL Rept. 1348. 1955. 1960.*

\*Information Reviewed and Reaffirmed.



# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

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Certain properties of papreg as affected by laminating pressure, resin content, and volatile content.	:	Seidl, R. J., Mackin, G. E., & Baird, P. K.	:	FPL Rept. 1394. 1943. 1962.*
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Title	:	Author	:	Publication and date
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The gluing characteristics of 15	:	Eickner, H. W.	:	FPL Rept. 1342.
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Procedures for measuring the	:	:	:	FPL Rept. 1344.
mold resistance of protein	:	:	:	Revised 1955.
glues.	:	:	:	1960.*
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teristics of plywood surfaces	:	:	:	1943. 1962.*
by sanding.	:	:	:	
A comparison of shearing	:	McLeod, A. M.,	:	FPL Rept. 1522.
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\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<hr style="border-top: 1px dashed black;"/>		
<u>Adhesives and Glue-Joint Properties</u> (continued)		
Resistance of several types of glue in wood joints to fatigue stressing.	Olson, W. Z., Bensend, D. W., & Bruce, H. D.	FPL Rept. 1539. 1945. 1960.*
Bleed-through of glue in aircraft plywood.		FPL Rept. 1541. 1944. 1960.*
Resistance to fatigue stressing of wood-to-metal joints glued with several types of adhesives.	Eickner, H. W., Mraz, E. A., & Bruce, H. D.	FPL Rept. 1545. 1946. 1962.*
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A study of methods for pre-paring clad 24S-T3 aluminum-alloy sheet surfaces for adhesive bonding.	Eickner, H. W., & Schowalter, W. E.	FPL Rept. 1813. 1950. 1962.*
Supplement: Part III. Effect of cleaning method on resistance of bonded joints to salt-water spray.	Eickner, H. W.	FPL Rept. 1813-A. 1950. 1962.*
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\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	:	Author	:	Publication and date
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Adhesive bonding properties of various metals as affected by chemical and anodizing treatments of the surfaces.	:	Eickner, H. W.	:	FPL Rept. 1842. 1953. 1960.*
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Basic shear strength properties of metal-bonding adhesives as determined by lap-joint stress formulas of Volkersen and Goland and Reissner.	:	Eickner, H. W.	:	FPL Rept. 1850. 1955. 1960.*
Determination of mechanical properties of adhesives for use in the design of bonded joints.	:	Kuenzi, Edward W.	:	FPL Rept. 1851. 1956. 1962.*
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\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	:	Author	:	Publication and date
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## Adhesives and Glue-Joint Properties (continued)

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## Sandwich Construction

Flexural rigidity of a rectangular strip of sandwich construction.	:	: FPL Rept. 1505. 1944. 1962.*
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Buckling loads of flat sandwich panels in compression. Various types of edge conditions.	: March, H. W., & Smith, C. B.	: FPL Rept. 1525. 1945. 1962.*
Supplement: Buckling of flat sandwich panels with all edges clamped. (Cores of end-grain balsa or cellular cellulose acetate and facings of aluminum or glass cloth laminates.)	: Boller, K. H.	: FPL Rept. 1525-D. 1947. 1962.*
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Sandwich Construction (continued)

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Supplement: Fiberglas-laminate face and end-grain balsa core sandwich material tested in shear.	:		:	FPL Rept. 1559-D. 1948. 1962.*
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Supplement: Aluminum facing and aluminum honeycomb core sandwich material tested in shear.	:		:	FPL Rept. 1559-H. 1949. 1962.*
Supplement: Glass-fabric-laminate facing and alkyd isocyanate foamed-in-place core sandwich material, tested in shear.	:		:	FPL Rept. 1559-J. 1952. 1958.*

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\*Information Reviewed and Reaffirmed.

MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<u>Sandwich Construction</u> (continued)		
Supplement: Aluminum facing and expanded-aluminum-honeycomb core sandwich material tested in shear.	Werren, Fred	FPL Rept. 1559-K. 1952. 1958.*
Shear stability of flat panels of sandwich construction.	Kuenzi, Edward W., Ericksen, W. S., & Zahn, John J.	FPL Rept. 1560. 1947. Revised 1962.
Stability of a few curved panels subjected to shear.	Kuenzi, Edward W.	FPL Rept. 1571. 1947. 1962.*
Durability of low-density sandwich panels of the aircraft type as determined by laboratory tests and exposure to weather.		
Supplement: Part IV.	Setterholm, Vance C., Heebink, Bruce G., & Kuenzi, Edward W.	FPL Rept. 1573-C. 1955. 1960.*
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1. Buckling under compressive end load.		
2. Deflection under uniform transverse load.		

\*Information Reviewed and Reaffirmed.



# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<u>Sandwich Construction (continued)</u>		
Supplement: Stiffness of flat panels of sandwich construction subjected to uniformly distributed loads normal to their surfaces--simply supported edges.	Kommers, W. J., & Norris, C. B.	FPL Rept. 1583-A. 1948. 1962.*
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Supplement.	Mohaupt, A. A., & Heebink, B. G.	FPL Rept. 1584-A. 1950. 1962.*
Supplement.	Heebink, B. G.	FPL Rept. 1584-B. 1953. 1962.*
Paper honeycomb cores for structural building panels: Effect of resins, adhesives, fungicide, and weight of paper on strength and resistance to decay.	Seidl, R. J., Kuenzi, E. W., & Fahey, D. J.	FPL Rept. 1796. 1951. 1961.*
Elastic stability of the facings of flat sandwich panels when subjected to combined edge-wise stresses.	Boller, K. H., & Norris, C. B.	FPL Rept. 1802. 1949. 1960.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
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<u>Sandwich Construction</u> (continued)		
Effect of elevated temperatures on the strengths of small specimens of sandwich construction of the aircraft type.	Kuenzi, Edward W.	FPL Rept. 1804. 1949. 1962.*
Supplement: Glass-cloth facings, balsa core--Tested immediately after the test temperature was reached.		FPL Rept. 1804-A. 1952. 1958.*
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Creep tests of sandwich constructions subjected to shear at normal temperatures.	Voss, A. W., & Norris, C. B.	FPL Rept. 1806. 1949. 1954.*
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Wrinkling of the facings of sandwich constructions subjected to edgewise compression.	Norris, C. B., Erickson, Wilhelm S., March, H. W., Smith, C. B., & Boller, Kenneth H.	FPL Rept. 1810. 1949. 1961.*
Effect of shear strength on maximum loads of sandwich columns.	Boller, K. H., & Norris, C. B.	FPL Rept. 1815. 1950. 1960.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
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<u>Sandwich Construction (continued)</u>		
Short-column compressive strength of sandwich constructions as affected by the size of the cells of honeycomb-core materials.	Norris, C. B., & Kommers, W. J.	FPL Rept. 1817. 1956.
Moisture-excluding effectiveness of edge seals for aircraft sandwich panels.	Heebink, B. G.	FPL Rept. 1822. 1950. 1962.*
Buckling of cylinders of sandwich construction in axial compression.	March, H. W., & Kuenzi, Edward W.	FPL Rept. 1830. 1952. Revised 1957.
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Evaluation of a vacuum-induced concentrated-load sandwich tester.	Heebink, B. G., & Kuenzi, E. W., & Ericksen, W. S.	FPL Rept. 1832-B. 1953.
Critical loads of a rectangular, flat sandwich panel subjected to two direct loads combined with a shear load.	Norris, Charles B., & Kommers, William J.	FPL Rept. 1833. 1952. 1958.*
Behavior of a rectangular sandwich panel under a uniform lateral load and compressive edge loads.	March, H. W.	FPL Rept. 1834. 1952. 1958.*
Effect of unbonded joints in an aluminum honeycomb-core material for sandwich constructions.	Norris, Charles B.	FPL Rept. 1835. 1952. 1958.*

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
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<u>Sandwich Construction (continued)</u>		
Shear-fatigue properties of various sandwich constructions.	Werren, Fred	FPL Rept. 1837. 1952. 1958.*
Stresses within a rectangular, flat sandwich panel subjected to a uniformly distributed normal load and edgewise, direct, and shear loads.	Norris, Charles B., & Kommers, William J.	FPL Rept. 1838. 1953. 1962.*
Buckling of sandwich cylinders in torsion.	March, H. W. Kuenzi, Edward W.	FPL Rept. 1840. 1953. 1958.*
Analysis of long cylinders of sandwich construction under uniform external lateral pressure.		
Supplement: Facings of moderate and unequal thicknesses.	Raville, Milton E.	FPL Rept. 1844-A. 1955. 1960.*
Buckling of sandwich cylinders of finite length under uniform external lateral pressure.	Raville, Milton E.	FPL Rept. 1844-B. 1955. 1960.*
Stresses induced in a sandwich panel by load applied at an insert.	Youngquist, W. G., & Kuenzi, Edward W.	FPL Rept. 1845. 1955. 1960.*
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\*Information Reviewed and Reaffirmed.

MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<u>Sandwich Construction (continued)</u>		
Transfer of longitudinal load from one facing of a sandwich panel to the other by means of shear in the core.	Norris, Charles B., & Boller, Kenneth H.	FPL Rept. 1846. 1955. 1960.*
Deflection and stresses in a uniformly loaded, simply supported, rectangular sandwich plate.	Raville, Milton E.	FPL Rept. 1847. 1955. 1962.*
Supplement: Experimental verification of theory.	Lewis, Wayne C.	FPL Rept. 1847-A. 1956. 1962.*
Mechanical properties of aluminum honeycomb cores.	Kuenzi, Edward W.	FPL Rept. 1849. 1955. 1962.*
Basic shear strength properties of metal-bonding adhesives as determined by lap-joint stress formulas of Volkersen and Goland and Reissner.	Eickner, H. W.	FPL Rept. 1850. 1955. 1960.*
Determination of mechanical properties of adhesives for use in the design of bonded joints.	Kuenzi, Edward W.	FPL Rept. 1851. 1956. 1962.*
Elastic stability of cylindrical sandwich shells under axial and lateral load.	Haft, Everett Eugene	FPL Rept. 1852. 1955.
Compressive buckling curves for sandwich panels with isotropic facings and isotropic or orthotropic cores.	Norris, Charles B.	FPL Rept. 1854. Revised 1958.

\*Information Reviewed and Reaffirmed.



# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
<u>Sandwich Construction</u> (continued)		
Mechanical properties of aluminum multiwave cores.	Kuenzi, E. W., & Setterholm, V. C.	FPL Rept. 1855. 1956.
Elastic buckling of a simply supported rectangular sandwich panel subjected to combined edgewise bending and compression.	Kimel, W. R.	FPL Rept. 1857. 1956. 1962.*
Supplement: Results for panels with facings of either equal or unequal thickness and with orthotropic cores.		FPL Rept. 1857-A. 1956. 1962.*
Elastic buckling of a simply supported rectangular sandwich panel subjected to combined edgewise bending, compression, and shear.	Kimel, W. R.	FPL Rept. 1859. 1956. 1962.*
Mechanical properties of glass-fabric honeycomb cores.	Kuenzi, Edward W.	FPL Rept. 1861. 1957.
An apparatus for measuring internal friction and fatigue strength of core materials used in sandwich construction.	James, William L., & Norris, Charles B.	FPL Rept. 1866. 1958.
Compressive buckling curves for simply supported sandwich panels with glass-fabric-laminate facings and honeycomb cores.	Norris, Charles B.	FPL Rept. 1867. 1958.

\*Information Reviewed and Reaffirmed.

# MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
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## Sandwich Construction (continued)

Buckling of simply supported rectangular sandwich panels subjected to edgewise bending.	Jahnke, W. E., & Kuenzi, E. W.	FPL Rept. 1868. 1959.
Design curves for the buckling of sandwich cylinders of finite length under uniform external lateral pressure.	Norris, Charles B., & Zahn, John J.	Research Note FPL-07. 1963.
Torsion of rectangular sandwich plate.	Cheng, Shun	FPL Rept. 1871. 1959.
Mechanical properties of some heat-resistant metal honeycomb cores.	Kuenzi, Edward W., & Jahnke, W. E.	FPL Rept. 1872. 1959.
Torsion of sandwich panels of trapezoidal, triangular, and rectangular cross sections.	Cheng, Shun	FPL Rept. 1874. 1960.
Supplement: Derivation of differential equation and its application to rectangular panels with loads applied at corners.		FPL Rept. 1874-A. 1960.
Compressive buckling curves for flat sandwich panels with dissimilar facings.	Norris, Charles B.	FPL Rept. 1875. 1960.
Compressive buckling curves for sandwich cylinders having orthotropic facings.	Norris, Charles B., & Zahn, John J.	FPL Rept. 1876. 1960.

\*Information Reviewed and Reaffirmed.



MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title	Author	Publication and date
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<u>Sandwich Construction</u> (continued)		
Effect of core thickness on shear properties of aluminum honeycomb core.	Jenkinson, Paul M., & Kuenzi, Edward W.	FPL Rept. 1886. 1962.
Mechanical properties of several honeycomb cores.	Stevens, Gordon H., & Kuenzi, Edward W.	FPL Rept. 1887. 1962.
Calculation of vibration damping in sandwich construction from damping properties of the cores and facings.	James, William L.	FPL Rept. 1888. 1962.
Compressive and shear properties of two configurations of sandwich cores of corrugated foil.	Stevens, G. H.	FPL Rept. 1889. 1962.
Paper-honeycomb cores for structural sandwich panels.	Seidl, Robert J.	FPL Rept. 1918. 1956. 1962.*
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Simply supported sandwich beam. A nonlinear theory.	Zahn, John J.	FPL Rept. 2157. 1959.
Durability of resin-treated paper honeycomb core.	Boller, K. H.	FPL Rept. 2158. 1959.
Structural sandwich design criteria.	Kuenzi, Edward W.	FPL Rept. 2161. 1959. Reprinted 1963.

\*Information Reviewed and Reaffirmed.

## MECHANICAL AND OTHER PHYSICAL PROPERTIES (continued)

Title

Author

Publication and date

### Sandwich Construction (continued)

Classical buckling of cylinders	: Zahn, John J., &	: Research Note
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axial compression--	: W.	:
orthotropic cores.	:	:
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Edgewise compressive buckling	: Zahn, John J., &	: Research Note
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by beams.	:	:

### PATHOLOGICAL AND BIOLOGICAL FEATURES

Chemical stain in noble fir as	: Luxford, R. F., &	: FPL Rept. 1329.
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The significance of the dis-	: Hepting, George	: FPL Rept. 1375.
colorations in yellow-poplar	: H., Roth, Elmer	: 1952. 1958.*
veneers.	: R., & Luxford,	:
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A simple device for detecting	:	: FPL Rept. 1390.
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\*Information Reviewed and Reaffirmed.

PATHOLOGICAL AND BIOLOGICAL FEATURES continued)

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"Black streak" in western hemlock: Its characteristics and influence on strength.	:	Luxford, R. F., Wood, L. W., & Gerry, Eloise	:	FPL Rept. 1500. 1943. 1960.*
Compression wood: Importance and detection in aircraft veneer and plywood.	:		:	FPL Rept. 1586. 1943. 1959.*
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\*Information Reviewed and Reaffirmed.

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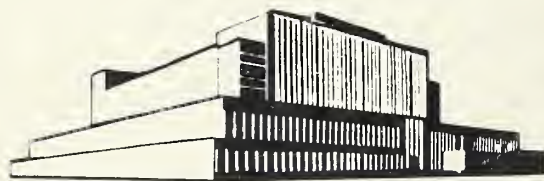
FOREST PRODUCTS LABORATORY

The following lists of publications deal with the other investigative projects of the Forest Products Laboratory and are obtainable upon request:

Boxing and Crating	Logging, Milling, and Utilization of Timber Products
Building Construction Subjects	Mechanical Properties of Timber
Drying of Wood	Pulp and Paper
Fire Protection	Structural Sandwich, Plastic Laminates, and Wood-Base Components
Fungus and Insect Defects in Forest Products	Thermal Properties of Wood
Furniture Manufacturers, Woodworkers and Teachers of Woodshop Practice	Wood Finishing Subjects
Glue and Plywood	Wood Preservation
Growth, Structure, and Identification of Wood	

Note: Since Forest Products Laboratory publications are so varied in subject matter, no single catalog of titles is issued. Instead, a listing is made for each area of Laboratory research. Twice a year, December 31 and June 30, a list is compiled showing new reports for the previous 6 months. This is the only item sent regularly to the Laboratory's mailing roster, and it serves to keep current the various subject matter listings. Names may be added to the mailing roster upon request.





## FOREST PRODUCTS LABORATORY

